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MOBILITY PACT

How to use data and strategic partnerships at city level for civic projects that improve the quality of life in Cluj-Napoca and the region.

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ABOUT THE REPORT

This report is one of the urban mobility projects supported by Urban Innovation Unit program, through which we aimed to understand the causes behind the current traffic congestion in Cluj, and what future actions could be implemented by the Cluj 2.1 program, local government, companies and universities.

This project was financed through Cluj 2.1| The Innovation Fund program, as part of the Cluj Cultural Center. For comments regarding the ideas, opinions and recommendations expressed in this report, you are welcome to contact us at contact@cccluj.ro.

Since our approach focuses on the city of Cluj-Napoca and its metropolitan area, most of the examples offered are about Cluj-Napoca. We believe, however, that the studied trends and the extracted recommendations can be applied to a number of cities in Romania and the region, and we would be glad to have a dialogue on these topics.

Urban Innovation Unit is a mechanism that supports groups of citizens, academics and business professionals in prototyping alternative solutions to urban problems identified together with the Cluj-NapocaMunicipality, and connected to urban mobility, housing and future of work.

We encourage alternative solutions that are not dependent on changes in infrastructure or legislation. After the initial testing period, we decide together if we make the proposed changes permanent and if it is possible to implement them in other parts of the city.

During 2018-2019 we focused on urban mobility, aiming to reduce the time spent in traffic by Cluj residents and to ensure that daily commuting to school or the office becomes more efficient, safe and pleasant for each of us and for the environment.

Cluj Cultural Center is a non-governmental organization focusing on culture and urban development, whose mission is to mobilize culture in partnership with other sectors in order to contribute to social transformation and urban development.

Cluj Cultural Center proposes 13 interdisciplinary projects and addresses a variety of themes: contemporary art, emotional and mental well-being, cultural and artistic education, urban regeneration, community connection, social inclusion, cultural industries, rural development, ethnography of imagined worlds, social and urban innovation, international cooperation, research and development of cultural and urban policies. .

The 70 members of the Center are local cultural organizations and institutions, Cluj universities, business clubs and clusters, civil society organizations, local and regional government.

FOREWORD

Some urban problems can only be solved by the administration, others only by the citizens, some by the business sector or by the academic one, but most of them can only be solved by all of us together. The success of these collective measures depends on how each of our actions is encouraged or discouraged. More than rewards or fines, structures and processes are sometimes most effective at forming behaviors.

That is the reason why, in this report, we aimed to explain behaviors related to the means of transport chosen for our daily trips in Cluj-Napoca. I am glad that through the Cluj 2.1 program we are able to actually translate the usefulness of strategic data and partnerships into civic projects that will significantly improve the quality of life in Cluj-Napoca and the region. We are at the beginning, but the beauty of collective action comes from its ability to quickly grow.

Anamaria Vrabie
Director Urban Innovation Unit

THANKS

Special thanks to the members of the Mobility Pact, who have contributed pro bono with their expertise and time towards identifying and processing the traffic demonstrative data sets, available at municipal level, which we have included in this report. We are grateful to all of them for their patience and confidence towards starting this inter-institutional process.

We also thank 1st year students from the Faculty of Sociology (UBB) for the practice work done for traffic measurements, Clever Taxi for the information provided about the frequency of taxi rides and the Public Transport Company of Cluj Napoca and High school “Nicolae Bălcescu” Cluj-Napoca for the anonymous information.

THE STRUCTURE OF THE REPORT

The report is structured according to the work model used by Urban Innovation Unit for developing each of its three areas of action (urban mobility, housing and the future of work).

The Partnership chapter: **Establishing the Mobility Pact** reflects the first step we take when addressing a new theme: we form an interdisciplinary and inter-institutional working group through which we aim to take decisions on the next steps. We do this to ensure that our approach is relevant to as many of the city's stakeholders as possible.

The chapter **14 Facts Resulted from the Mobility Pact r**eflect the gathering of existing information and data on the respective topic which will document our future actions.

The chapter **Action: Future Projects Based on the Results of the Mobility Pact** reflects how we translate the results of previous steps into actions to be implemented by Urban Innovation Unit, the public administration, companies, universities and initiative groups.

The chapter **Other Initiatives Supported by Cluj 2.1 | The Innovation Fund** describes a summary of the projects that we tested in the pilot program (2017-2018) and what actions we are preparing for the next period.

THE PARTNERSHIP: ESTABLISH-ING THE MOBILITY PACT

The Mobility Pact is a working group established in the context of Urban Innovation Unit in November 2017, bringing together local government specialists, companies and universities interested in using big data related to traffic, available at municipal level, for civic projects that improve the quality of life.

We have established this working group because currently there is no data or an inter-institutional collaboration protocol that allows us to understand how the current traffic conditions influence our decision towards a particular mode of transport. We sought to understand the causes behind the current traffic congestion and what future actions could be implemented by the local government, companies and universities.

Between November 2017 and March 2018, the working group identified a series of traffic data available at the municipal level. We then worked with demonstrative and anonymous data sets to better understand the commuter flow from and to Cluj-Napoca and compared the efficiency of different means of transport (private car, public transport, bicycle) towards certain destinations.

The members of the Mobility Pact are:
Adrian Neagomir (Evozon), Anamaria Vrabie (Cluj Cultural Center), Anca Goron (Life is Hard), Bianca Muntean (ARIES Transilvania), Bogdan Hruban (NTT Data), Bogdana Neamțu (Babeș-Bolyai University), Călin Hințea (Babeș-Bolyai University), Claudiu Salanță (County Council of Cluj-Napoca), Gabi Crețu (Evozon), Irina Daia (Evozon), Marcel Ielcean (Cluj-Napoca Municipality), Mihai Racu (Cluj-Napoca Technical University), Nicu Urs (Babeș-Bolyai University), Norbert Petrovici (Babeș-Bolyai University), Oana Buzatu (Cluj-Napoca Municipality, Ovidiu Cîmpean (Cluj-Napoca Municipality), Paul Brie (Evozon), Rarița Zbranca (Cluj Cultural Center), Ștefan Teișanu (Cluj Cultural Center), Titus Man (Babeș-Bolyai University), Victor Solea (NTT Data).

RESEARCH:

14 FACTS RESULTED FROM THE MOBILITY PACT

1. URBAN MOBILITY IS MORE THAN JUST TRAFFIC

Traffic describes the frequency of transport operations carried out with certain means of transport within a specified time and condition. In other words, when we are in the car at 8:00 AM on our way to work - we are the traffic. We have three types of traffic in Cluj-Napoca: (a) Transit traffic, (b) Commuter traffic and (c) Domestic traffic.

Urban mobility is a concept that looks at the decisions underlying our transport choices: What's the reason for that specific trip? Why do we choose a particular mode of transport? Is our destination accessible by several modes of transport or is it inaccessible to a certain segment of the population? How long does the commute take (the trips that are regularly taken) and what are the economic, social and environmental costs associated with it?

Cities are starting to use strategic documents to help them understand more aspects related to urban mobility. The most important instrument is the Sustainable Urban Mobility Plan (SUMP) of Cluj-Napoca. This is a tool that proposes various measures and scenarios aimed to meet the mobility needs of people and businesses in the city and neighboring areas, while contributing to meeting European objectives in terms of energy efficiency and environmental protection. The measures and projects included in the SUMP are based on a transport model developed using a set of computerized traffic modeling algorithms, which are recommended to be updated as frequently as possible. That is why we wanted to learn what other information we can integrate in the future to improve traffic modeling.

Transit traffic. Transit traffic is the component of traffic generated by vehicles that originate in a locality other than Cluj-Napoca and have a destination other than Cluj-Napoca, but pass through the city.

Currently, the authors of this report did not have access to quality data to evaluate this component. This traffic can be counted by different technologies such as the EVOZON video camera counting prototype.

Commuting traffic. Commuting traffic is generated by the day-to-day movement of employees, preschool children, pupils and students from their residential areas to the city of Cluj-Napoca.

This type of traffic was estimated in this study through the use of a complex set of data, 2011 Population and Household Census data, 2015-2018 public transport data, 2018 taxi transport data, official school enrollment figures for 2017- 2018, the age structure of Cluj-Napoca population according to the 2017 National Institute of Statistics data.

Domestic traffic. Daily traffic inside the city generated by the disjunction between the place of residence and the destination depending on the activity (work, education, health, leisure, shopping).

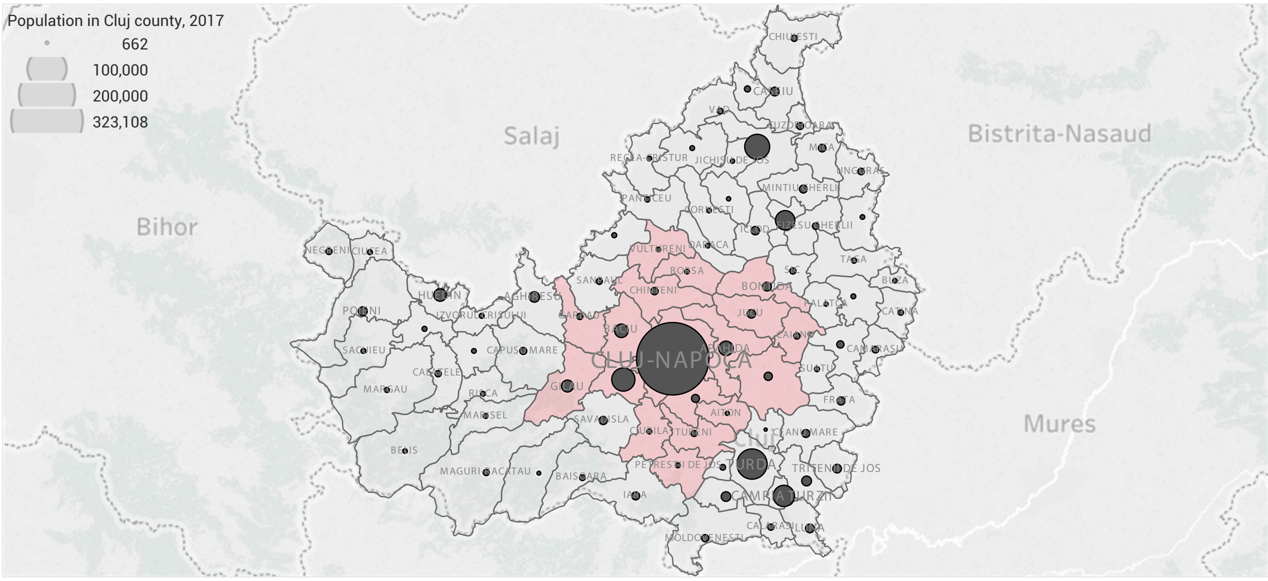
In this study, this type of traffic was estimated by types of transport (public, private cars, taxis) using 2015-2018 data from the Public Transport Company, 2015-2017 data related to car ownership from the Tax Authority, the number of public parking lots and spaces in 2017, the volume of orders through the CleverTaxi application in 2018. Population residence depending on occupational and professional categories was described using 2011 Census data, while the spatial distribution by activity was taken from the Chamber of Commerce and Industries data.

2. CLUJ-NAPOCA EXTENDS FURTHER THAN ITS ADMINISTRATIVE AND TERITORIAL LIMITS

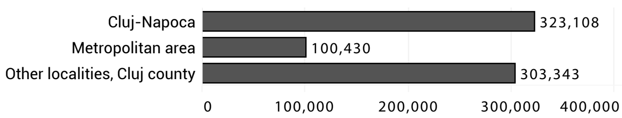
In 2017, Cluj county had a population of 727 thousand people. Approximately 60% of the population is concentrated in the metropolitan area. 45% of the total county population lives in Cluj-Napoca. According to the census, the county's population grew by 5.2% since 2011, with the metropolitan area concentrating most of this increase. The population in the metropolitan area increased by 15.7%, meaning approximately 14 thousand people, while the population of Cluj-Napoca did not change.

The size of the adjacent localities, which play the role of residential districts of Cluj-Napoca, is at a scale manageable by the city. For example, in Florești and Gilău live 42,000 people, the equivalent of the Mărăști neighborhood. In Baciu and Gârbou live a total of 14 thousand people, the equivalent of the Dâmbul Rotund neighborhood. Apahida and Jucu together have 16 thousand residents, a population similar to that of Iris neighborhood.

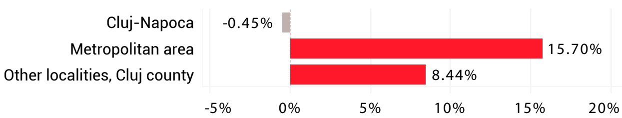
Distribution of population by Cluj county localities, 2017



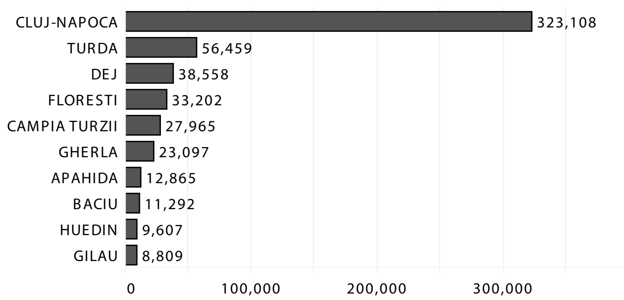
Population in Cluj county, 2017



Population increase, 2017 compared to 2011



Top 10 localities in Cluj county, 2017

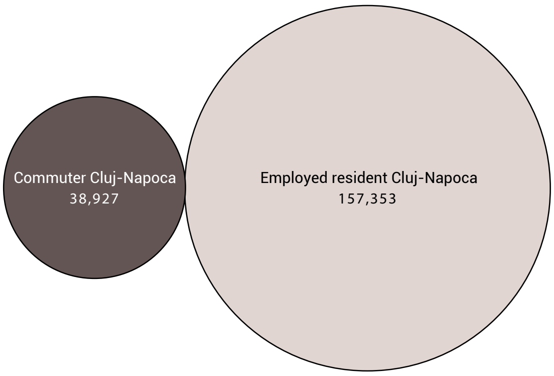


Data source: INS, Tempo POP108D

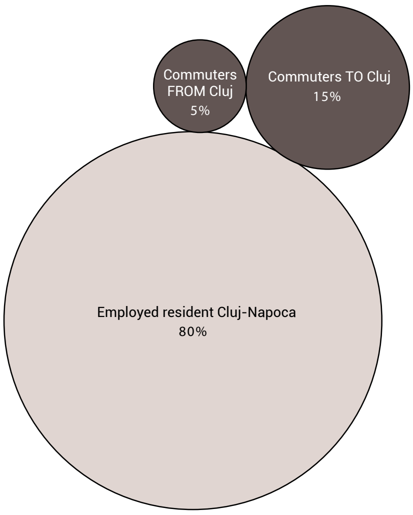
One fifth of the county's employed population commutes daily to a locality other than that of their residence. The employed population is the largest category, accounting for 47% of the total county population. About 60,000 people commute daily in the entire county out of a total of 340,000 people employed.

One in five employees commutes in Cluj-Napoca, the proportion being similar at the level of the city as well as in the county. That means that about 38,000 people commute daily to work, either to enter or exit the city.

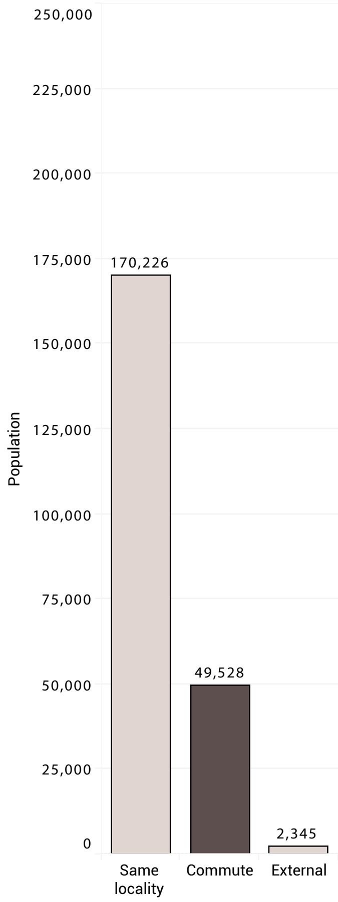
Employed commuters, Cluj-Napoca



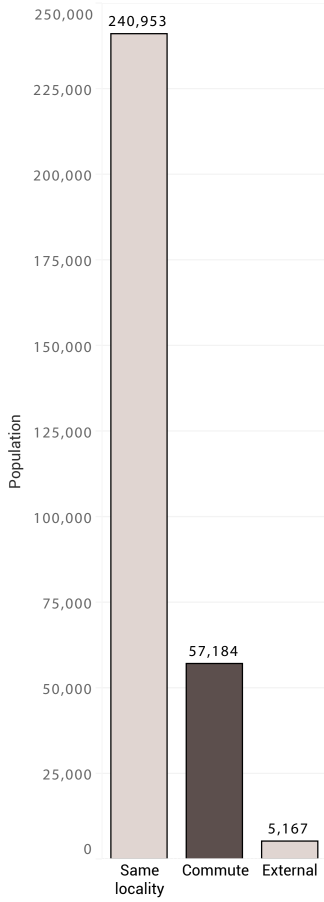
Employed commuters Cluj-Napoca



Job location,
metropolitan area, 2011



Job location,
Cluj county, 2011



Data source: RPL2011

3. THE LEVEL OF EDUCATION AND EMPLOYMENT DETERMINE THE TYPE OF COMMUTE UNDERTAKEN BY CLUJ RESIDENTS

There are significant differences between the commuting flow towards the city and the flow from the city to the outside.

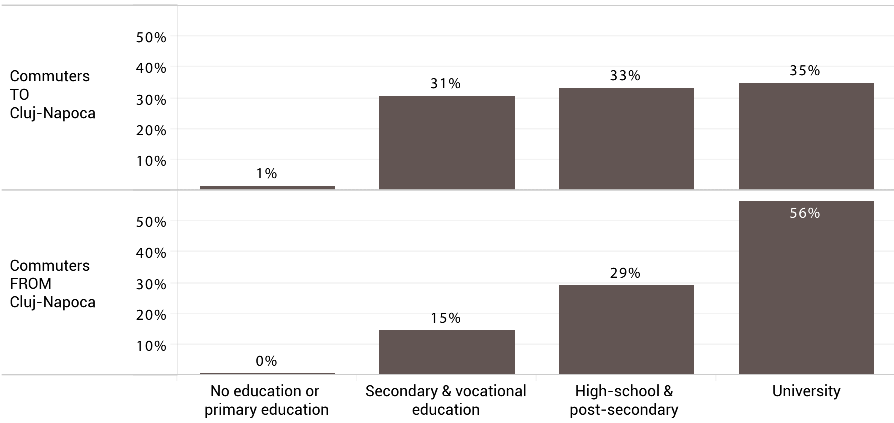
The inbound flow consists of 60% workers and services employees with secondary and high school education. More than a fifth of Cluj-Napoca companies operate in the manufacturing industry. Some are multinational, others are small firms with up to 15 employees. Additionally, another fifth of the companies in Cluj operate in the trade industry, employing service workers. There is a secondary inbound flow of people with higher education, representing 35%. This group works mostly in the service sector of the municipality and live mainly in Florești, Apahida, Baciu and Cojocna

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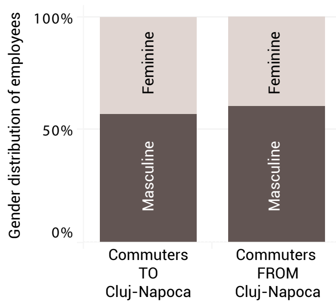
The outbound flow consists mostly of people with a higher education, representing almost 60%, working in management positions, or as specialists and technicians. These persons represent the management and support employees, working in production units and suburban logistics areas in the vicinity of Cluj, particularly on the two axes: East (Apahida, Jucu, Bonţida) and West (Baciu, Gârbou, Aghireş). There is a secondary outbound flow of people with high school education performing manual labor on the new industrial platforms.

The dynamics of daily commuting for work is also visible in the way the occupational categories are distributed in the localities of the county. The city of Cluj-Napoca is dominantly inhabited by people with positions of leadership and specialists, while people residing in the rest of the county are employed as workers.

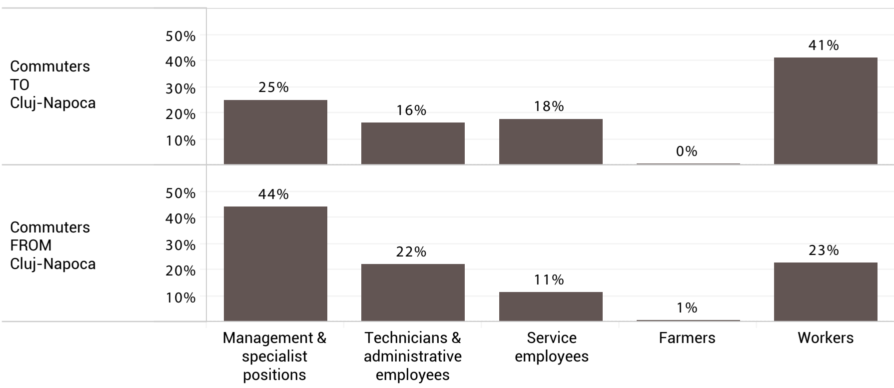
Education of employed commuters



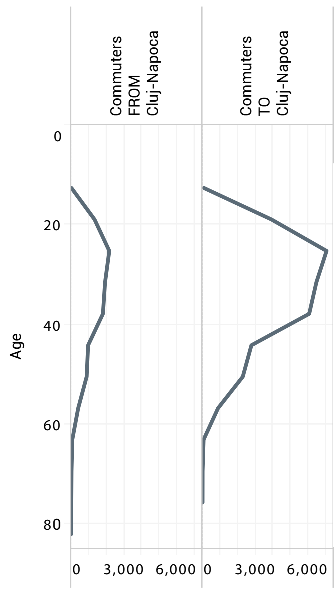
Gender of commuters



Occupation of employed commuters



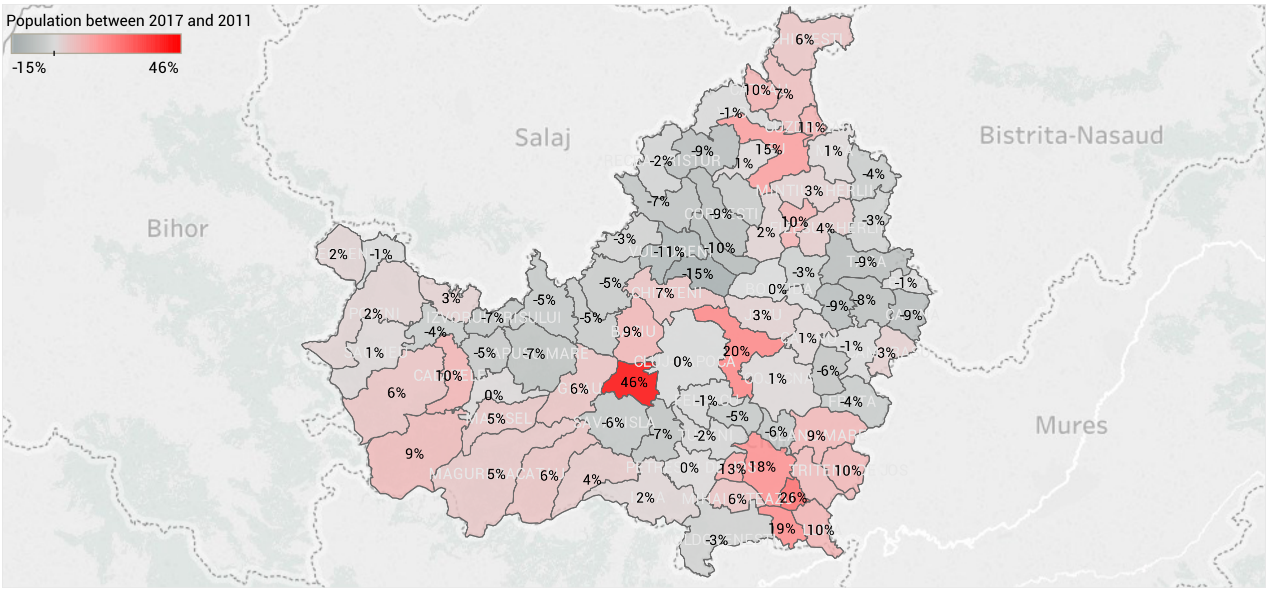
Age of commuters



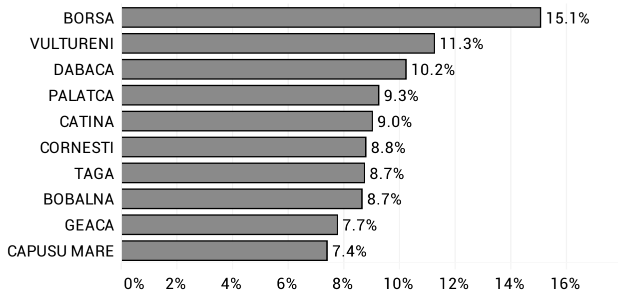
Data source RPL2011

Daily employee dynamics is an important source of urban and interurban traffic. Currently due to the real estate dynamics more and more people working in the service industry live in the city, while in the metropolitan area and the other localities of the county reside those who work with manual labor in processing activities or logistics. Additionally a large number of specialists at the beginning of their careers reside in the suburban areas. The division of labor is accompanied by a geographical division of residence.

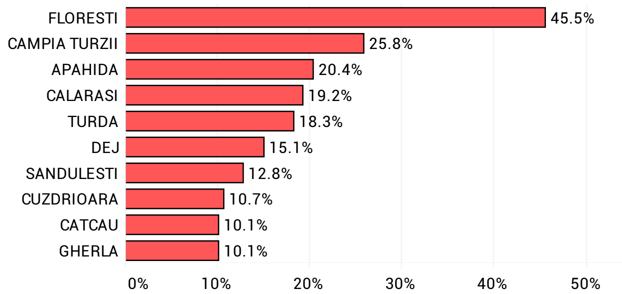
Population difference between 2017 and 2011, in Cluj county localities



Localities with population decrease, 2017-2011



Localities with population increase, 2017-2011

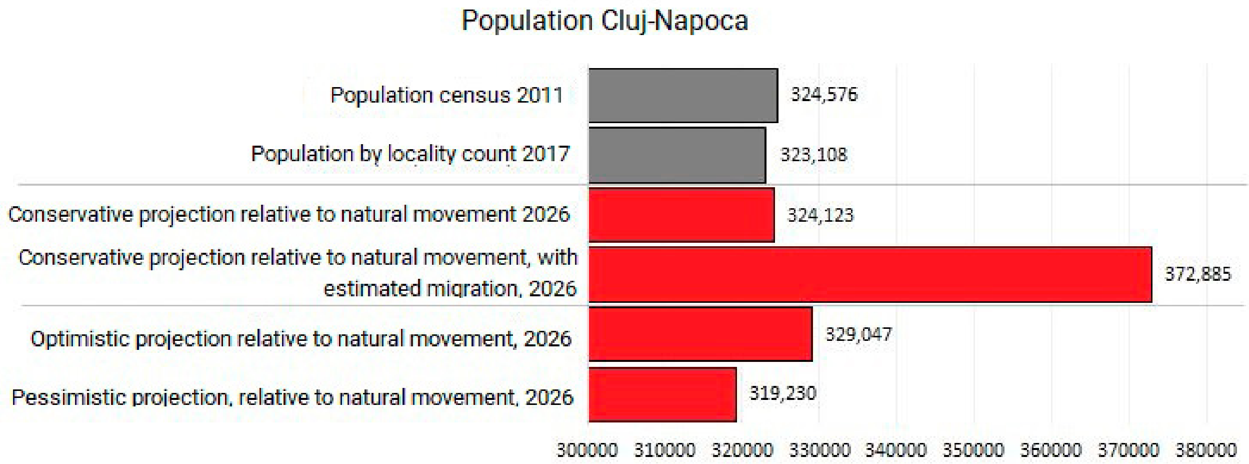


Data source INS, Tempo POP108D, RPL2011

4. THE MIGRATION GROWTH EXPECTED UNTIL 2026 IN THE MUNICIPALITY OF CLUJ-NAPOCA WILL NOT OCCUR IN THE CITY, BUT IN THE METROPOLITAN AREA

The daily mobility generated by commuting will most likely not decrease over the next decade. The population of the city of Cluj-Napoca has stayed relatively constant over the last 30 years. Annual percentage changes are minor. However this is not due to the natural reproduction of the population. Fertility rates and mortality rates rather indicate a city that should have seen a reduction of the population, however this has not happened.

It is reasonable to assume that the constant volume of the Cluj-Napoca population is due to migration, not to the natural movement of the population (fertility and mortality).



Data source: INS, Tempo POP108D, RPL2011

We can achieve three types of demographic projections:

a. *Optimistic projections,* where we modify fertility parameters to account for the natural reproduction rate of the population, and where mortality is placed below the European average.

b. *The pessimistic projections* start from the assumption that fertility rates will fall, at a rate at least similar to that of the national trend, while mortality rates will remain similar to the current ones.

c. *Conservative projections* are those in which we maintain current fertility and mortality parameters (the natural movement of the population). However, in the case of Cluj-Napoca we also introduced additional migration estimates

Even if we do not know the precise number of immigrants, migration can be estimated by comparing the age and gender distribution of the population at the 2011 census with age and gender distribution in 2017, taking into account the natural movement of the population.

The comparison puts us in the comfortable situation of being able to assess the population surpluses by age and gender during the time passed since the census, and, implicitly, to assess migration. In this manner we can make a conservative demographic prediction, keeping the same rates in terms of both the natural movement of the population and the migratory movement.

a. An optimistic view of the natural movement (fertility and mortality) suggests that the population of Cluj-Napoca in 2026 would reach 340 thousand people.

b. The pessimistic scenario in terms of natural movement (fertility and mortality) suggests that the population of Cluj-Napoca in 2026 would reach 320 thousand people.

There is little difference between the two scenarios, since we are referring to 10 thousand people.

c. The conservative scenario shows us that from the natural movement perspective, the population will continue to reproduce. But if we take into account the migratory movement, the picture is quite different: the city will grow to 370 thousand people.

Taking into account the increase of population in Floreşti and the metropolitan area of Cluj-Napoca from 2011 to 2017, we can expect that most of the migration will peak by 2026, not in the city itself, but in the suburban areas.

The increase in population by approximately 50,000 people, in this conservative scenario, will occur as it has previously, through an increase in the suburban population.

De facto, the city of Cluj-Napoca includes in its daily functioning the localities Floreşti, Baciu, Chinteni and Apahida. These play the role of distributed districts as a second concentric circle around the city center.

Assuming that jobs distribution will remain similar and that the economic profile of the city will continue to develop the services offered by specialists, we can expect the mobility needs of this suburban population to remain similar. That means that we can reasonably expect that pressure on individual and collective traffic to increase.

5. THE DISTRIBUTION OF RESIDENCES AND WORK PLACES CONTINUES TO DETERMINE THE CONTINOUS TRAFFIC FLOW THROUGH THE CITY CENTER

WHERE WE RESIDE

The number of employed persons are the most highest category of people in the city, accounting for 45% of the total population in Cluj-Napoca.

Much of the city's population is concentrated in the Mărăști and Mănăștur districts. As a matter of fact, the distribution of population in neighborhoods actually shows the periods of recent economic development in Cluj-Napoca: the population employed in industries (communism), the new entrepreneurs (1990s), the service sector specialists (after 2000). Densities differentiated by districts are accompanied by a distribution by occupational category.

The last two decades have brought a significant growth to the service sector in Cluj-Napoca, as well as a growth of the labor market for specialists and managers. 2% of the active population is represented by business owners, experiencing a significant increase in the amount of wealth. These new categories have preferred, since the mid-1990s, the single family houses in Gruia, Gheorgheni, Grigorescu and Zorilor.

Starting with the mid-2000s, new employees in specialist positions have preferred newly built areas near neighborhoods with single family houses, such as Bună Ziua, Europa, Andrei Mureşeanu, Făget, Borhanci. This category of the population has come to represent the dominant occupational category in these neighborhoods.

New developments have not been connected or are currently poorly serviced by public transport, and the poor state of public and private roads in these areas has increased demand for cars with high volume cylinders

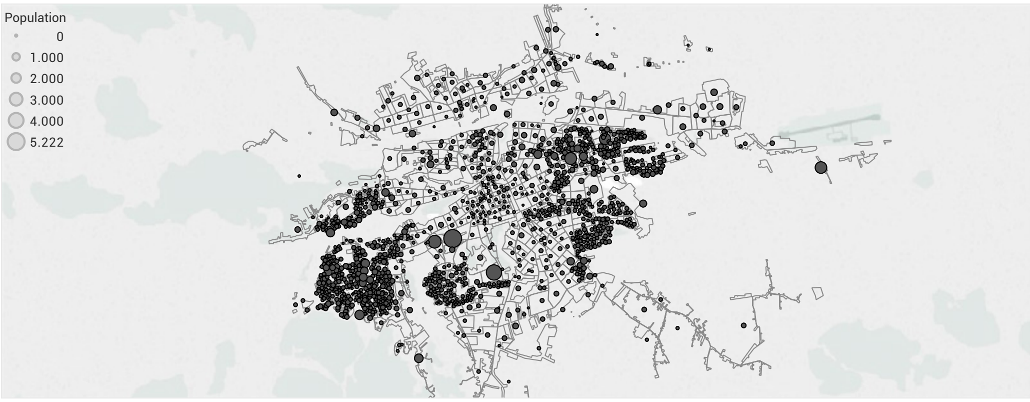
WHERE WE WORK

The occupational distribution is accompanied by a relatively different geography of urban activities. Most of the service activities are concentrated in the central area and in the single-family housing areas of the Grigorescu, Gheorgheni and Andrei Mureșanu neighborhoods. Information and communication technology activities are overwhelmingly located in the center. The central location of these services is a major source of daily and traffic-generating mobility.

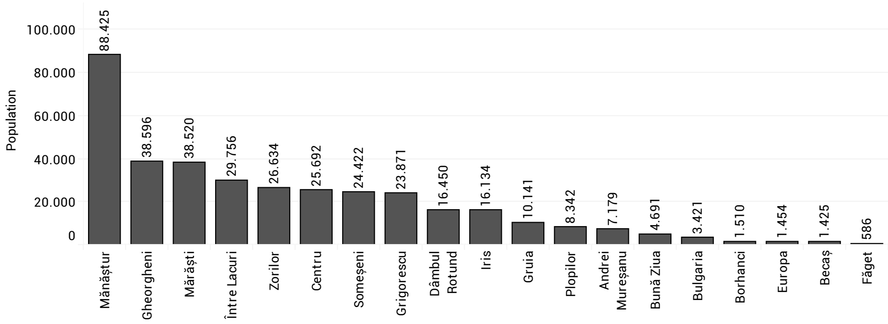
On the other hand, most of the industrial activities are located on the Northern Industrial Platform, while the logistics warehouses are on the outskirts of the city in the Northeast and Northwest. Service workers live in the socialist

neighborhoods and in the northern area of the city. Partial overlap between workers' dwellings and the manual labor activities reduces the territorial mobility of this category of the population. Socialist quarters are well connected to the public transport level with industrial platforms and relatively well connected with the logistics platforms. However, the amount of manual labor required for this industry are not covered by employees residing in Cluj. In fact, a large number of workers make the commute from the metropolitan area and from the rest of the county, generating a steady flow of traffic.

Population distribution in Cluj-Napoca, 2011



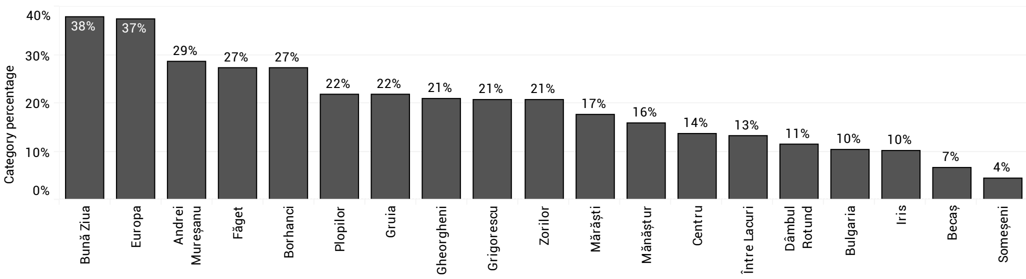
Population distribution by neighborhood in Cluj-Napoca, 2011



Data source: INS, Tempo POP108D, RPL2011



Distribution of management & specialist positions by neighborhood, 2011

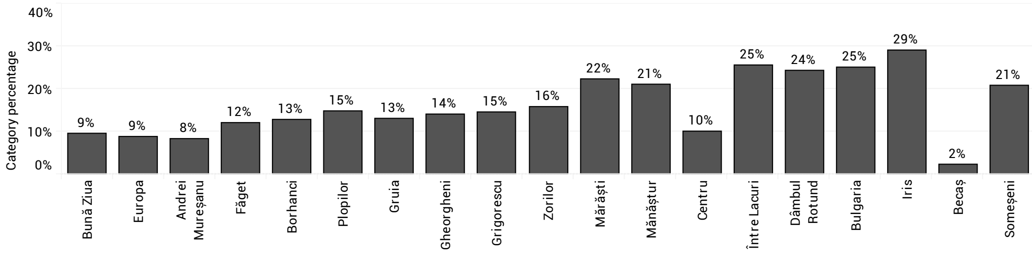


Data source: RPL2011

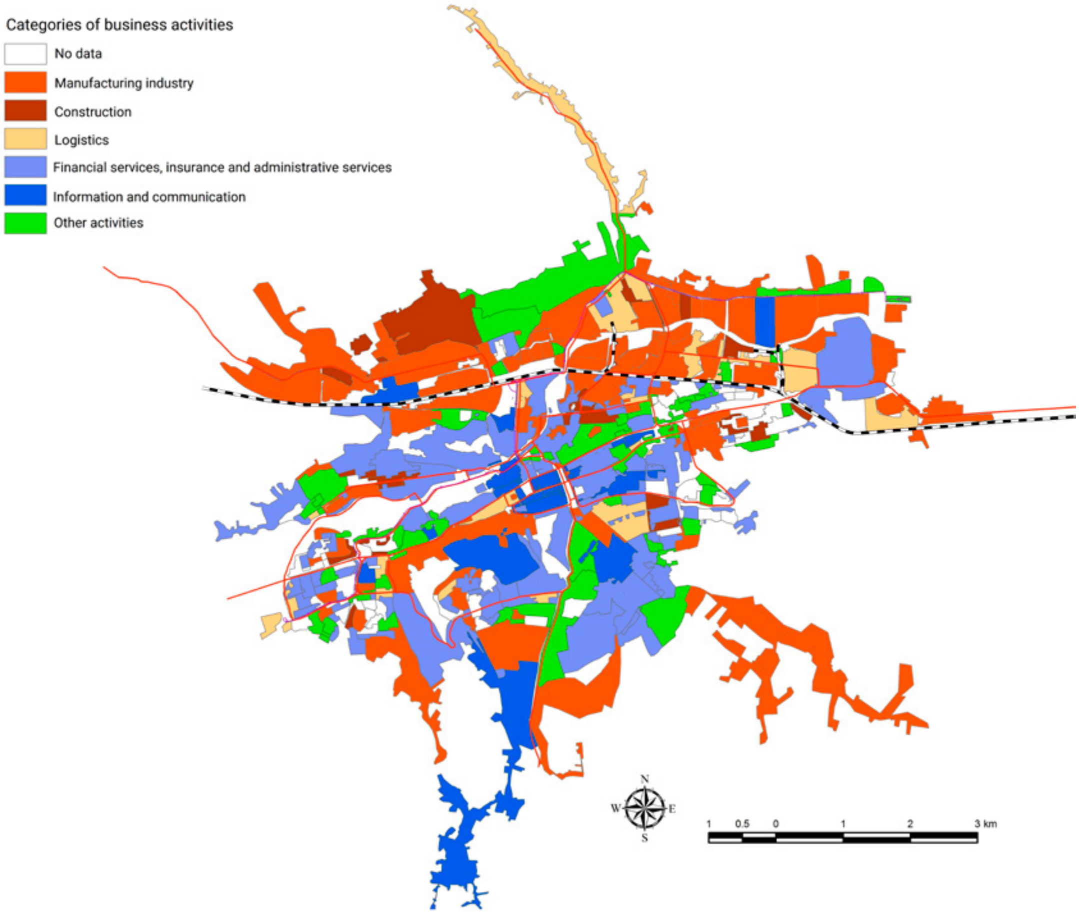
Distribution of the 60,500 workers and service employees, Cluj-Napoca 2011



Distribution of workers and service employees by neighborhood, Cluj-Napoca 2011



Data source: RPL2011

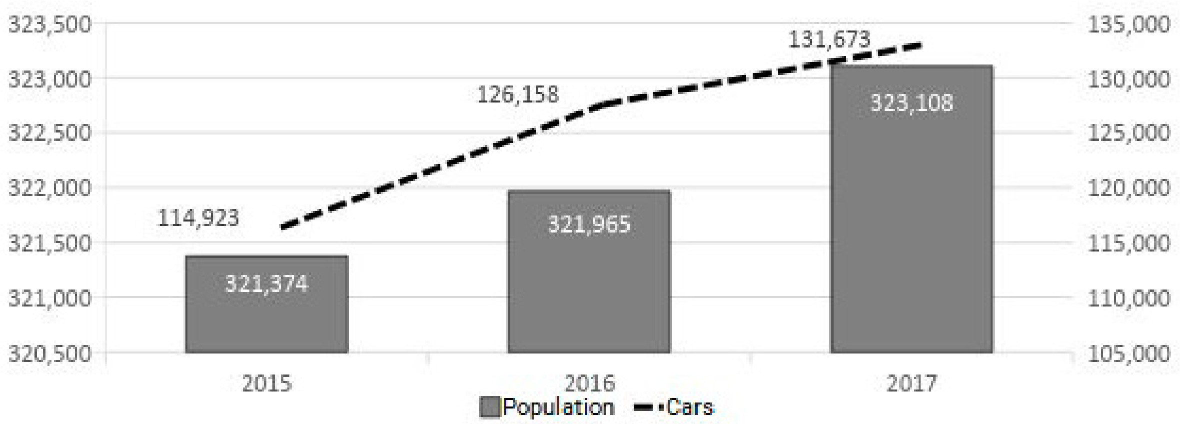


Data Source Chamber of Commemrce and Industries Cluj-Napoca, 2012

6. THE NUMBER OF MOTOR VEHICLES INCREASED BY 15% BETWEEN 2015 AND 2017, WHILE THE POPULATION IN CLUJ-NAPOCA DECREASED BY 0.5%

The urban public transport system does not service the entire city. Most urban routes cover residential districts built up to the late 1990s, but integrate very little of the new urban developments built over the last 30 years. According to the measured distances in walking minutes to a public transport station, the center of the city is very well connected, while the peripheral neighborhoods of the city, where new real estate develops, is poorly serviced.

This growth trend is also reflected in the city of Cluj-Napoca, the number of cars increasing by 16,750 units between 2015 and 2017, reaching 131,673 vehicles, or 322.5 cars/1000 inhabitants, placing Cluj-Napoca far above the national average. This growth is a real one, driven by the growth of car ownership and not by the drop in population.

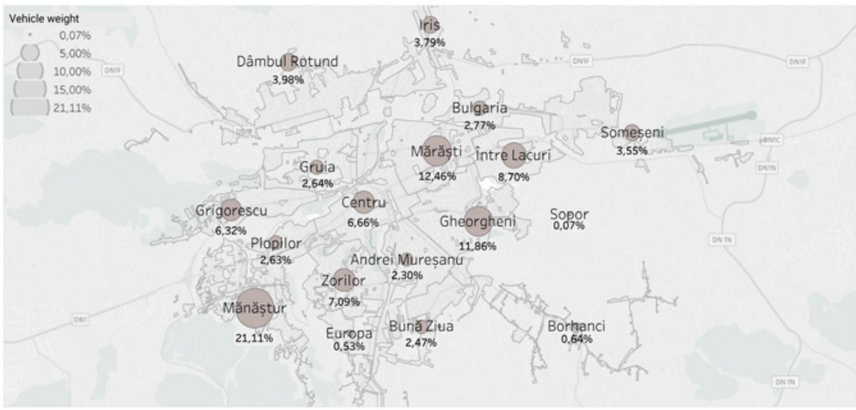


Data source: Tax Authority Cluj-Napoca, 2017

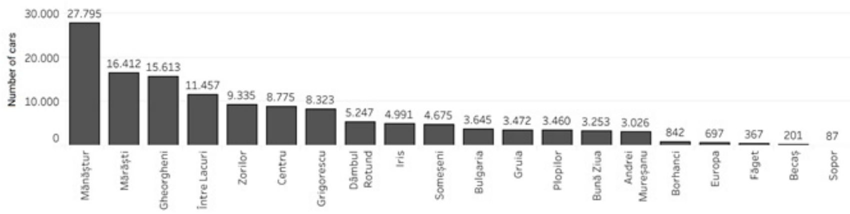
7. THE VEHICLES REGISTERED IN CLUJ-NAPOCA OCCUPY A SURFACE EQUAL TO 365 FOOTBALL FIELDS

In January 2016, records accounted for 46,386 public parking places (parking lots, parking structures, parking spots, awnings, garages), mainly located in the center of the city and in residential areas dominated by blocks of flats built before 1990. If we were to calculate their total surface area, we would come to the conclusion that these public car parks occupy the equivalent of 129 football fields of the same size as Cluj Arena. However, taking into account the actual number of cars registered in Cluj-Napoca in 2017, it results that stationary cars occupy the equivalent of 365 football fields.

Vehicle weight distribution by neighborhood, Cluj-Napoca 2017



Vehicle distribution by neighborhood, Cluj-Napoca, 2017



Data source: Tax Authority Cluj-Napoca, 2017

8. THE URBAN PUBLIC TRANSPORT SYSTEM DOES NOT SERVICE THE ENTIRE CITY

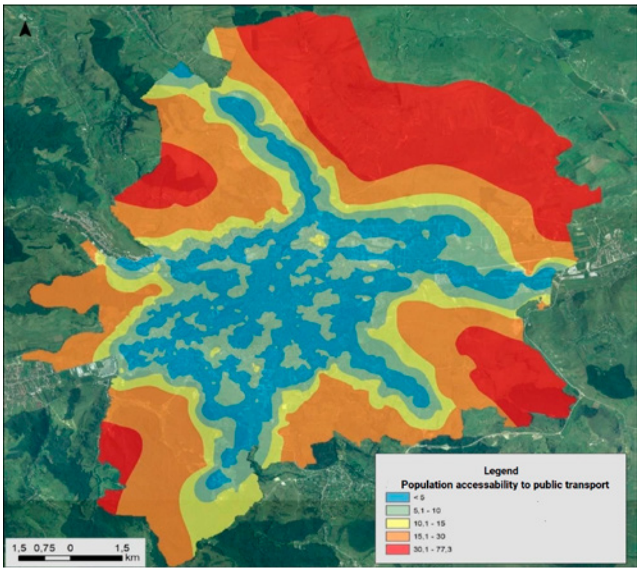
The urban public transport system does not service the entire city. Most urban routes cover the residential districts which were built up to the late 1990s, while the new urban developments built during the last 30 years are not well connected. According to the distances, measured in walking minutes to a public transport station, the center of the city is very well connected by public transport, while the peripheral neighborhoods of the city, where new real estate is developed, is poorly serviced.

Thus, the southern areas of the city are not well connected by public transport services, these being the areas where we find the highest concentration of new dwellings, strongly dominated by people working in leadership positions and specialists (Bună ziua, Europa, Sopor, Borhanci). The system also does not service the North East areas (Baciu), as well as the North (Valley of Chintău) and North West (Someşeni).

In these areas, the public road network is less extensive than in the rest of the city. These are also the areas with the largest increase in the number of cars between 2015 and 2017, cars having the highest cylindrical volumes on average compared to the rest of the city.

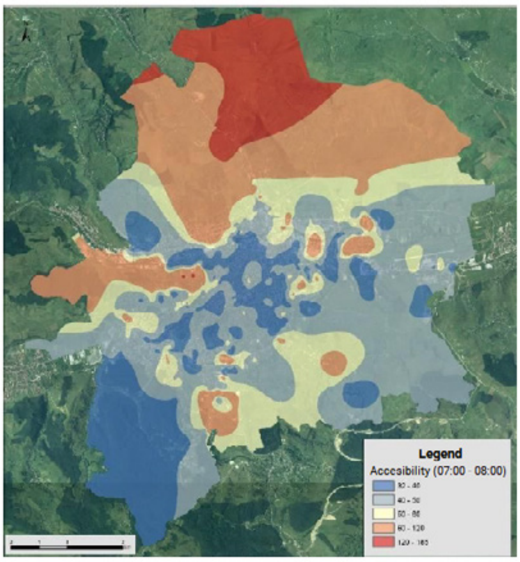
Certain public transport stations are more accessible than others, accessibility also varying by schedule. According to official public transport schedules, we are able to calculate an average time of access to each station from all other public transport stations, depending on the time of the day.

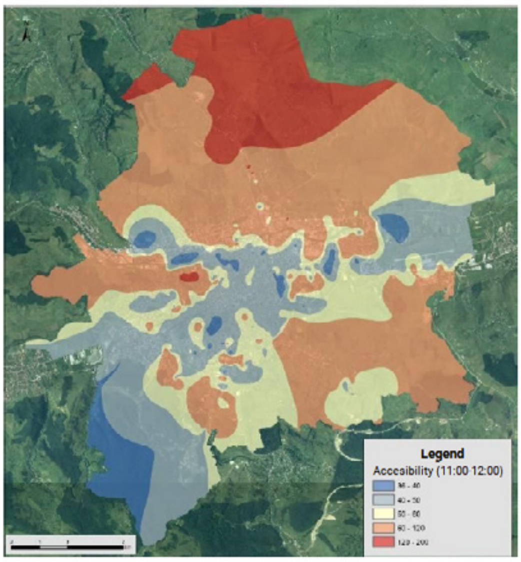
The walking distance, by minutes, to a public transport station in Cluj-Napoca in 2018



Data source: Tax Authority Cluj-Napoca, 2017

The average travel time between a station and another, using public transport in the city, between 7-8 am (left) and 11-12 am (right), Cluj-Napoca, 2018





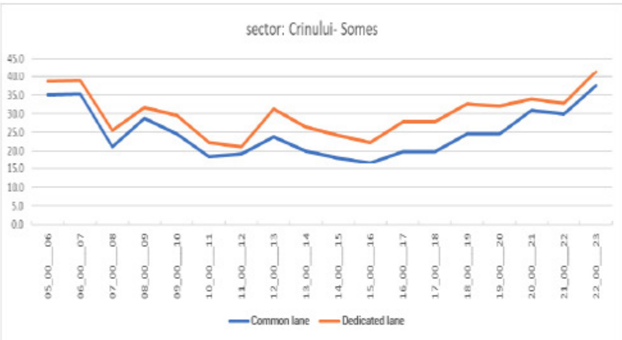
Data source: CTP, Schedule by bus stops, 2018

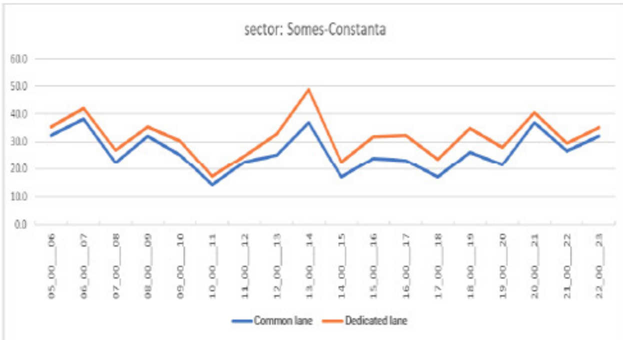
9. THE DEDICATED PUBLIC TRANSPORT LANES ALLOWED FOR AN AVERAGE SPEED INCREASE OF 6.5 KM / H FOR BUSES, IN COMPARISON TO THE SPEED RECORDED FOR BUSES USING SHARED LANES

One of the key measures taken by Cluj-Napoca Municipality, which made public transport a priority, was the implementation of a dedicated bus lane. This policy is a pilot program, targeting certain road sections along the East-West axis, linking the major districts of Mărăști, Gheorgheni and Mănăștur. This measure had the expected effects: an increase in the speed of public transport vehicles on all road sectors and in all hourly intervals after the implementation of the dedicated lane.

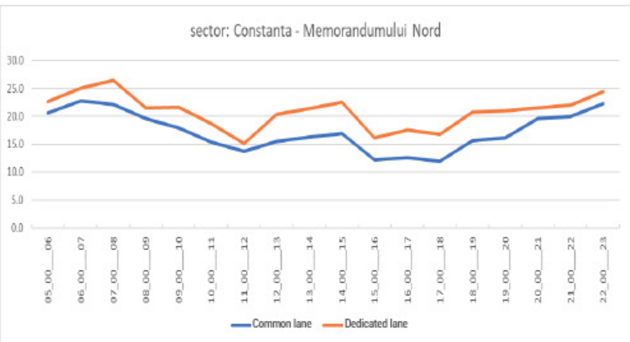
Using the location data of the buses and trolleybuses in the time periods between March - June 2015 and January - February 2018, we were able to calculate the change in speed during all time ranges between 5:00 and 23:00. The change in the speed of public transport vehicles after the implementation of the dedicated bus lanes vary between 5 and 10 km per hour, with an average increase of 6.5 km/h across all road sectors. The increases are significant compared to the average vehicle speeds, which according to SUMP are 19.5 km/h.

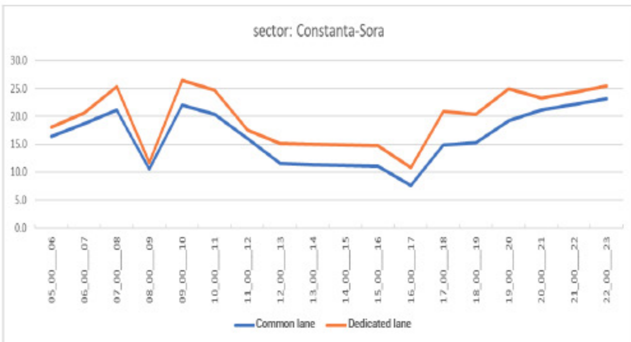
Average travel speeds by time intervals, on dedicated public transport lanes





Comparison between the March 2015 - July 2016 period, when buses used the shared lanes (blue), and February 1 - 6, 2017 after the implementation of the dedicated lanes (orange)





10. MOST RETIREES LIVE IN NEIGHBORHOODS WELL CONNECTED BY PUBLIC TRANSPORT

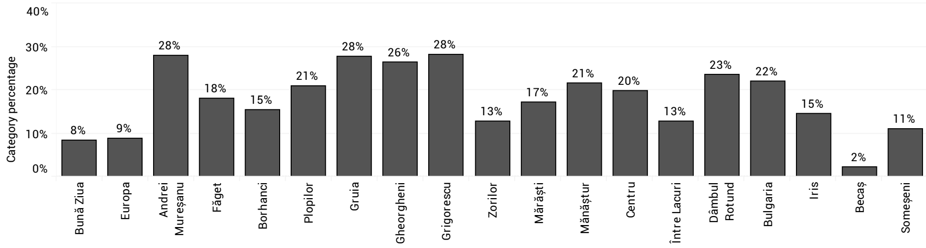
Most of the retirees live in the city center, interwar and socialist neighborhoods. They do not live in new neighborhoods like Bună Ziua or Europa.

This category of residents lives in those neighborhoods well connected by public transport. Half of the public transport trips recorded, using monthly passes, between September 2015 and January 2017, are undertaken by retirees.

Distribution of retirees, Cluj-Napoca 2011



Distribution of retirees by neighborhood, Cluj-Napoca 2011

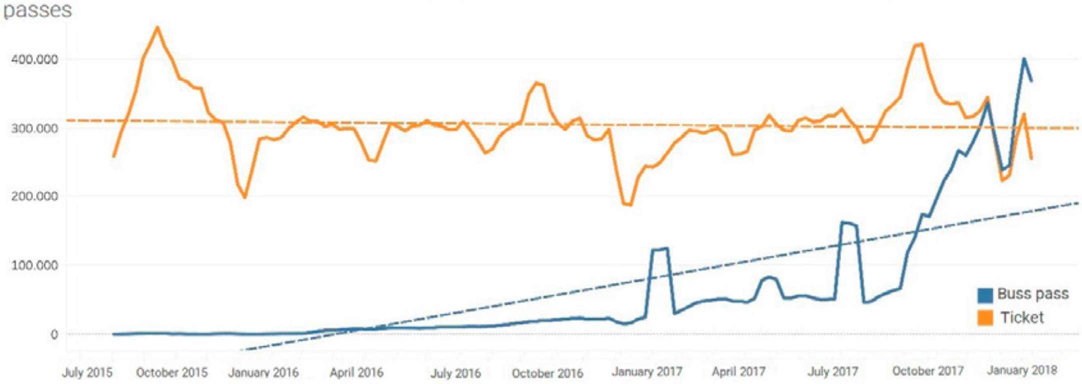


Data source: RPL2011

Electronic card validation on urban bus lines, Sept 2015-Jan 2017



Electronic card validation on urban bus lines, Sept 2015-Jan 2017, comparison between single tickets and passes



11. 37% OF STUDENTS USE PUBLIC TRANSPORT THROUGH MONTHLY PASSES

In Cluj-Napoca, students benefit from a series of discounts towards the use of public transport, partially provided by the Ministry of Education, and partially by the Cluj-Napoca Municipality. In many cases, students can actually receive free public transport through monthly passes valid on two public transport lines operated by CTP.

In 2017, the difference in the number of passes obtained were between 4206 passes for August 2017 and 28,301 for October 2017. The number of students enrolled in the academic year 2017-2018 for all study cycles (bachelor, master, doctorate), according to data from the Ministry of Education, is 76,062, meaning that in October 2017, 37% of students used public transport through monthly passes.

Given that there are a number of measures allowing for the monthly passes of students to be reduced by 50% or to be free of charge, it is important to consider various ways through which more students could be encouraged to use public transport. The measures for this should aim to:

1. Change the type of reduced passes offered. The current passes allow access on 2 public transport lines, option that does not correspond to their mobility needs between home-university, home-leisure, or university-leisure.

2. Increase the validity period of the passes. Currently, renewing the pass each month means that each student needs to go to one of the 15 sales offices, which have pre-determined schedules and involve long waiting times.

3. Digitalize the process through which students obtain the bus passes and simplify the steps required (for example, removing the requirement of having non-financial cards attesting the student status).

4. Present the procedure for granting / extending the free or reduced bus passes for students in an attractive and simple format.

12. PUPILS REPRESENT 14% OF THE TOTAL POPULATION OF THE CITY. IN 2017 20.7% OF THEM USED PUBLIC TRANSPORT DAILY DURING THE WEEK

WHERE PUPILS LIVE IN THE CITY

According to the National Institute of Statistics in Cluj-Napoca in 2017, preschoolers accounted for 5.6% of the city's population (i.e. 18 thousand people) while 8.3% were pupils (i.e. 27 thousand people). Together, the two population groups account for 14% of the total population of the city.

Percentage of the total neighborhood population: The highest percentage of preschool and schoolchildren live in the new neighborhoods located in the south of the city (Bună ziua, Borhanci, Sopor, Europa), neighborhoods predominantly inhabited by people working as senior managers and specialists.

Additionally, the neighborhoods with a relatively large proportion of school-age children are those located in the northern partsof the city (Iris, Bulgaria, Dămbul Rotund), mainly inhabited by manual labor employees or service workers.

Absolute values in neighborhoods: Mărăști and Mănăștur, being the largest neighborhoods in the city, are districts where most pupils reside. But pupils represent a small proportion of the total population of these neighborhoods (8% and 9%, respectively)

PUPILS' BEHAVIOR IN TRAFFIC: PUBLIC TRANSPORT

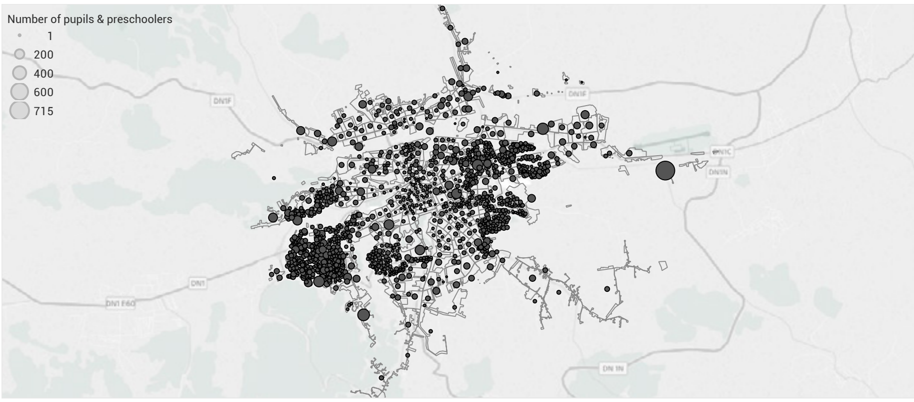
From the traffic perspective we have two distinct behavior types. The first one is related to the fact that most school children reside on the the East-West axis that passes through the Center (Mărăşti-Mănăştur).

On the other hand, a significant proportion of pupils, with parents that immigrated to the city of Cluj over the past two decades, live on the North-South axis. They represent a very significant proportion of the children residing in the new neighborhoods.

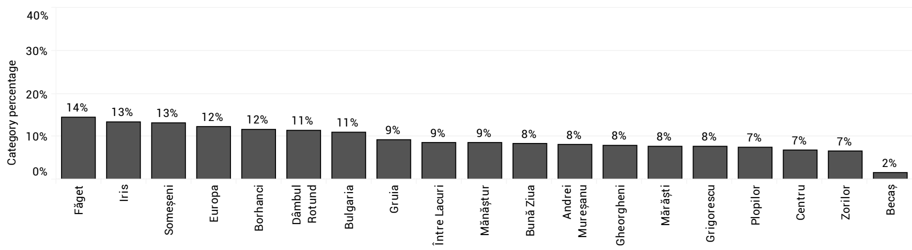
The residence data confirms the traffic behavior when it comes to using public transport. Between September 2017 and January 2018, there were approximately 286,000 trips taken by pupils, using free bus passes. This represents 15% of all trips done using monthly passes.

Out of the total number of pupils, 20.7% used public transport daily within a week. That represents one in five pupils. In Cluj, during the 2017-2018 school year, 35.7 thousand pupils were enrolled in school, of which 29.8 thousand are residing in the city of Cluj-Napoca. The percentage was calculated by taking in consideration the number of children enrolled in school.

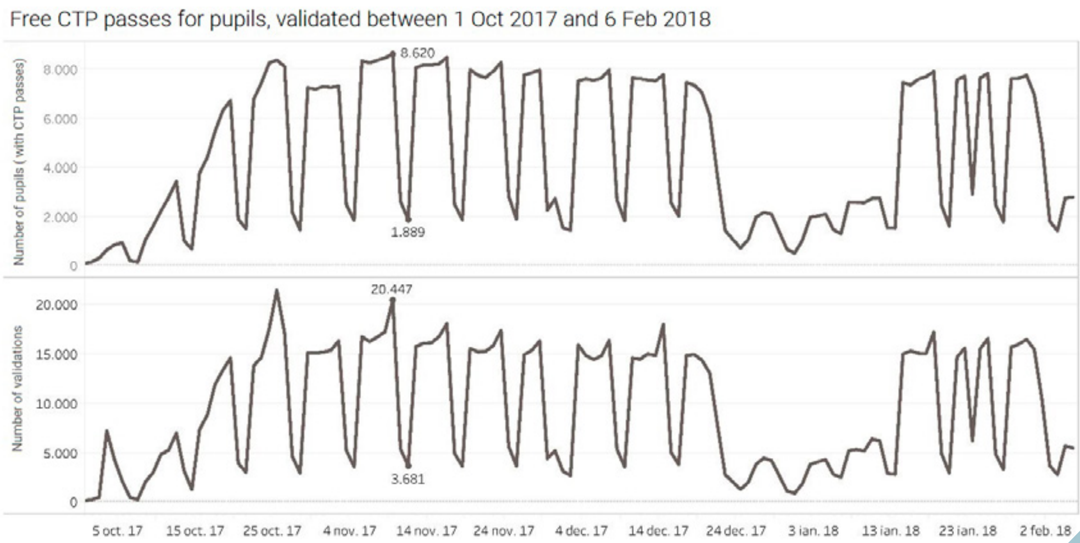
Distribution of pupils and preschoolers, Cluj-Napoca 2011



Distribution of pupils and preschoolers by neighborhood



The number of pupils and buss pass validation carried out by pupils in public transport vehicles between Oct. 2017 and Jan. 2018



Data source CTP, Ticketing, 2018

13. 45% OF PUPILS ATTEND SCHOOL IN THE CITY CENTER, 35% OF THEM BEING ENROLLED IN PRIMARY SCHOOL

WHERE SCHOOLS ARE LOCATED IN THE CITY

The highest concentration of schools, or one quarter of them, are located in the city center. Half of the total number of schools are located in the major districts of the city (Mănăștur, Mărăşti and Gheorgheni). The remaining one-fourth of the schools are dispersed throughout the other districts in the city.

The distribution of pupils within educational establishments is similar to the one within the schools. The highest concentration of pupils, or one third of the pupils studying in Cluj-Napoca, attend school in the city center. 45% of the pupils attend school in the three large districts of Mănăștur, Mărăşti and Gheorgheni. The rest of the schoolchildren are dispersed throughout the rest of the city.

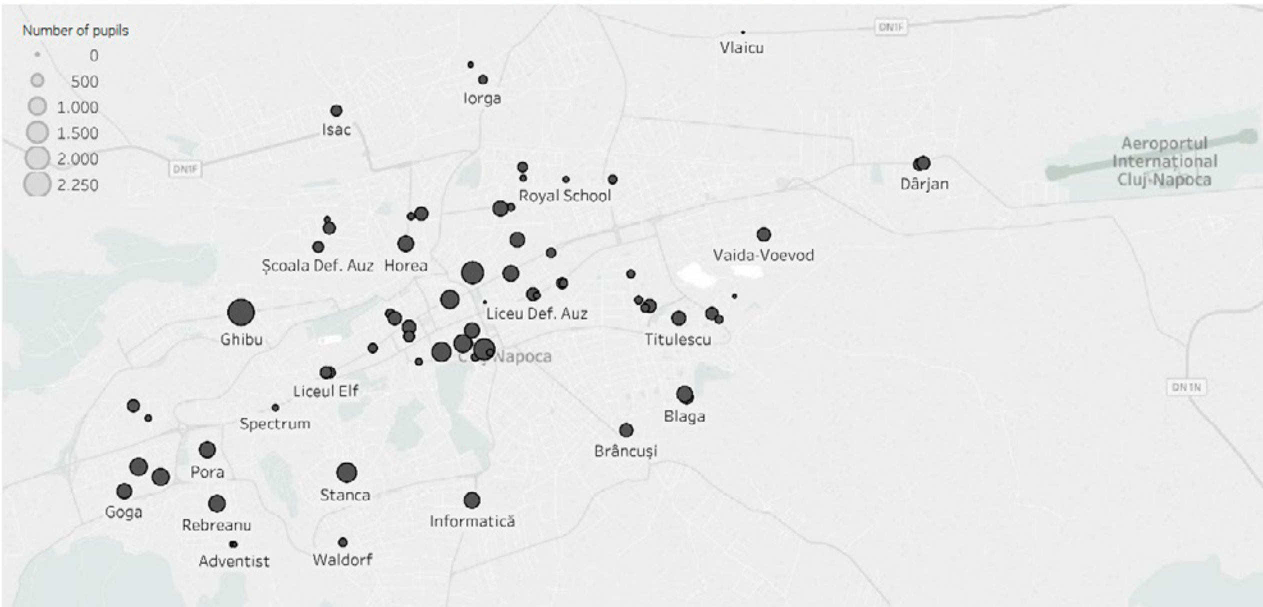
The city center has the most balanced distribution of year groups out of all city neighborhoods.

In the center 35% of pupils are enrolled in primary school. The average in all other neighborhoods is 45%.

On one hand, the city center has, in fact, the smallest proportion of primary school children. On the other hand, most pupils attend the schools located in the center. Therefore, in absolute terms, most primary school pupils study in the center.

Most high school establishments are also located in the center. At the same time, a significant number of high school aged-students attend vocational schools, and most of the vocational education establishments are distributed in the city's neighborhoods. Therefore, there is a relatively uniform distribution of pupils aged 14-18 throughout the city's educational establishments.

Distribution of educational institutions with classes 0-12 in Cluj-Napoca, 2018



Pupil distribution by neighborhood, considering the address of the educational institution, 2018



Data source : Location of education establishments in Cluj-Napoca, 2017-2018

14. CASE STUDY: USING THE CAR IS FASTER THAN THE BUS, BY APPROXIMATELY 7.5 MINUTES, WHEN TRYING TO REACH THE „NICOLAE BĂLCESCU" HIGH SCHOOL IN THE MORNING, STARTING IN ONE OF THE NEIGHBORHOODS LOCATED AT LEAST 15 MINUTES AWAY FROM THE SCHOOL

Taking in consideration the fact that most schools are located in the center of the city, our aim was to analyze their accessibility using various means of transport, during the morning traffic (7 am-8 am), starting the journey in the peripheral neighborhoods.

Therefore, during the month of June 2018, as part of their student practice, students from the Faculty of Sociology and Social Work of Babeș-Bolyai University have measured the travel speed of various means of transport (public, personal car, bicycle) using GPS systems, heading to the "Nicolae Bălcescu" high school. This specific high school was selected due to its central location and its educational offer, covering primary, secondary and high school education.

The results of the measurements showed that the personal car is the fastest mean of transport, from different points of the city to Nicolae Balcescu High School.

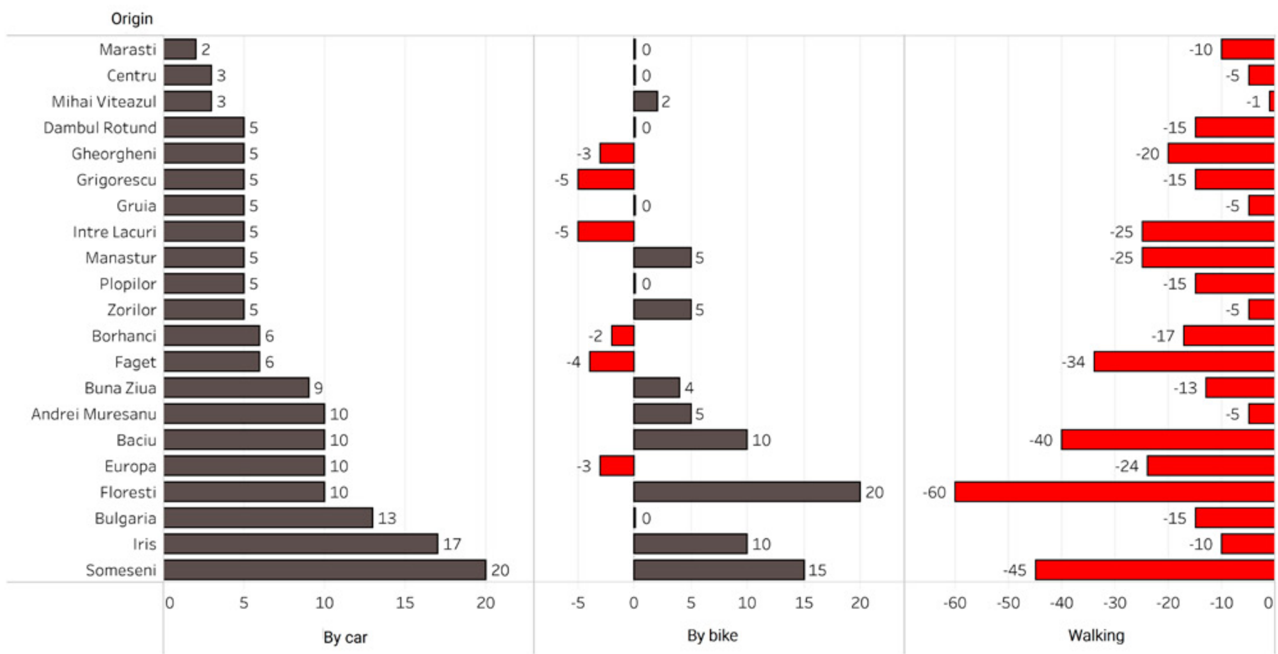
Personal car: Taking the car is faster than taking the bus, if we consider the average speed of buses, using the timetables provided by CTP, during the time interval 7-8 in the morning, coming from any Cluj neighborhood. On average, no matter the neighborhood, it is faster to travel by car by 7.5 minutes, compared to the bus.

Bicycle: For short distances the bicycle is slower than public transport or takes about the same time. However, for long journeys, bicycle travel is faster than using public transport. However it is much more dangerous, since there are no dedicated bike lanes for journeys between localities, which means it is rarely used for long distances.

Walking: It is consistently slower than traveling by public transportation.

This comparison of travel times using different means of transport suggests that the personal car remains the fastest mean of transport.

Average speed compared to buses, reaching N. Bălcescu High School at 8 am, June 2018, by neighborhood, Cluj-Napoca



Data source: Student practice, 22 students, Babeș-Bolyai University, Faculty of Sociology and Social Work, June 2018.

ACTION:

FUTURE PROJECTS BASED ON THE RESULTS OF THE MOBILITY PACT

The information resulted from the research carried out by the Mobility Pact points to the decision that Cluj-Napoca should take in the next few years: whether it is planning a city for people or for cars. Our behavior related to the decision to use a particular method of transport is primarily influenced by the existence, quality and viability of the transport alternatives to the personal car. Only then can our behavior be influenced by socio-cultural factors such as social norms or preferences focused on quality of life.

For the short term, our recommendations on future projects based on the results of the Mobility Pact are:

1. FOR URBAN INNOVATION UNIT

Simplify the procedures for the use of public transport by different categories of users: students and users who prefer digital services. Extend the functions of the Mobility Pact, including an international board.

2. FOR THE CLUJ-NAPOCA MUNICIPALI

Prepare an urban mobility forecasting center and implement personalized transport plans that meet the needs of Cluj residents, focusing on involving the groups most open to changing their mode of transport: Business Travel Zone for Cluj-Napoca, Travel Plan for the new neighborhoods (Bună Ziua, Borhanci, etc.), Travel plan for schools.

3. FOR THE MEMBERS OF THE MOBILITY PACT

Adopt an Open Data protocol at the local level, through which data sets can become available to any third party, and support relevant existing approaches, through FSPAC's coordination.



OTHER INITIATIVES SUPPORTED THROUGH URBAN INNOVATION UNIT

GREEN ON THE MORII CHANNEL

For one month, the initiative group from the Farmec Park area - Morii Channel has tested ways to reduce travel to the city center, by improving how we spend our free time in the Mărăști neighborhood.

WHY WE DID THIS

A series of short private car trips are made from the residential neighborhoods of Cluj to the center, for leisure purposes.

THE TEST

ÎBetween March and May 2018, the Green on the Morii Channel team walked door to door to the neighbors of the Farmec Park, Gorunului Street and Scorţarilor Street and documented a series of priorities and ideas about the use of the area. This field research was then used as a design theme for students at UTCN's Faculty of Architecture and Urban Planning to develop interventions that were installed for one month in the public space.

The interventions that were tested during the month of may 2018 aimed to:

- Increase pretexts for socializing
- Involve citizens through symbolic actions for maintaining common spaces
- Rethinking the existing infrastructure according to the neighbors' needs

THE MAIN RESULT

Following the positive results of the interventions, Cluj-Napoca Municipality is currently working with the initiative group to prepare the design documentation for making the proposed changes permanent.



*The Green on the Morii Channel team is represented by:

Initiating team: Larisa Bucatariu, Iunia Buricescu, Ana-Maria Cosma, Anda Gheorghe, Edith Heczei, Alexandra Lucaci, Miruna Moldovan.

Neighbors: Caroli Sebastin Ajtai, Attila Almási, Csaba Ludovic Balazs, Tibor Heltai, Andrei Kiss, Anca Moldovan, Anca Mureșan, Alexandru Varga.

Expert collaborators: Tiberiu Ciolacu, Dana Iacoban, Benjamin Kohl, Cristina Labo, Dorin Man, Adriana Măgerușan, Marius Cătălin Moga, Ovidiu Rusu, Mihai Stănuș, Ioana Suceava, Alin Tănasă.

OUR CREEK FROM LA TERENURI

For one month, the initiative group from the Calvaria - La Terenuri creek area has tested ways to reduce travel to the city center by improving how we spend our free time in the Mănăștur neighborhood.

WHY WE DID THIS

A series of short, private car trips are made from the residential neighborhoods of Cluj to the center, for leisure purposes.

THE TEST

Between April and June 2018, Our Creek from La Terenuri team went door to door to the neighbors in the area bounded by the Calvaria Creek in Mănăștur and the connecting section of Dacia Cinema with La Terenuri green area, and documented a series of customs and ideas about the use of the area. This field research was then used as an architecture and landscaping workshop theme for UTCN Faculty of Architecture and Urban Planning students to think about the interventions that were developed for one month in the public space.

The interventions that were tested during the month of June 2018 aimed to:

- Negotiate with the owners of illegally parked cars to have the cars moved temporarily, in order to be able to organize social events
- Create the necessary infrastructure taking in consideration the needs the neighbors

THE MAIN RESULT

Following the consultation between the initiative group and representatives of the Cluj-Napoca City Hall, it has been decided that the report resulting from this project should serve as a consultation and evaluation for the offers received to the public auctions regarding the master plan for the development of the sports and leisure area "La terenuri" (currently under assignment).

*The team from Our Creek at La Terenuri is represented by:

Initiating team: Maria Fleșer, Gabi Rus, Gabi Barbu, Marcela Armanca, Mihai Armanca, Păunița Boancă, Sonia Borș Oprica, Silviu Medeșan, Lala Panait.

Neighbors that joined during the process: Sebastian Boancă, Grig Vulpe, Bernadeta Pătrașcu, Anna Șargov.

Collaborators: Anca Chis and Marina Mironica



STREET FOOD ON MOLNAR PIUARIU

For a weekend we returned Molnar Piuariu street to pedestrians and tested the neighbors' reactions to a possible future pedestrian project.

WHY WE DID THIS

The Sustainable Urban Mobility Plan of Cluj-Napoca provides for a series of measures limiting automotive access and increasing the space for pedestrians and alternative transport. The methods through which these changes take place is not foreseen in the plan. Before the Cluj-Napoca Municipality invests in specialized studies for the permanent transformation of the street, we wanted to test the reactions of the neighbors to a possible future pedestrian project.

THE TEST

Between 11-12 November 2017 the Molnar Piuariu street was closed to automobile access, and our partners organized Street Food on Molnar Piuariu.

THE MAIN RESULT

The lessons learned from this temporary intervention were afterwards integrated in the specifications for the street design, developed by the Cluj-Napoca Municipality. Following the assignment of the design theme, in August 2018 the Center for Innovation and Civic Imagination (CIIC) held the first consultation with the neighbors about the future project.

URBAN DIALOGUES - 2017 EDITION

Urban Dialogues is the annual conference of Urban Innovation Unit, designed as an exchange of best practices in urban innovation for citizens, public administration, academic, and business professionals involved in program activities. The first edition of Urban Dialogues took place between 9-11 November 2017 and marked the debut of Urban Innovation Unit.

Special guests for this edition were Boston Office for New Urban Mechanics (MONUM), the Research, Development and Innovation Department of the City of Boston, and one of the world's first and most successful innovation divisions (iTeam). Set up in 2010, MONUM has developed its own rapid prototyping model for projects that could improve citizens' experience in the city and have generated a range of public-private partnerships with universities and companies.

The conference was organized into a series of modules:

TRAINING MODULE:

"Perspectives of the new private-public partnerships: city innovation divisions", supported by Boston Office for New Urban Mechanics (MONUM). The course was attended by representatives of the Cluj companies involved in Urban Innovation Unit, the Municipality and the independent sector concerned with urban development.

WORKSHOP MODULE:

The team members - inhabitants of the Scorțarilor area - the Morii canal and Bucegi - Calvaria Creek have worked with urban development experts, sociologists, traffic specialists, public administration, and event organizers to improve the planning of the experiments they will run in neighborhoods.

Additionally, the Boston Innovation Division has conducted a workshop for to the Cluj-Napoca Municipality, the Cluj Cultural Center, the Babeş-Bolyai University and Evozon, on the use of big data for traffic management in the city, a subject at which Boston excels. As a result of this workshop, we launched the Mobility Pact Working Group.

CLUJ FUTURE OF WORK

CLUJ FUTURE OF WORK marks the start of projects from the second focus area of Urban Innovation Unit - the future of the labor market.

Through Cluj Future of Work, we are trying to test how the city, the cultural sector, the academic sector, the business sector and the administration, as well as the community in general, can prepare for the changes that will occur in the labor market over the next 20 years.

Cluj Future of Work is a project developed and coordinated by the Cluj Cultural Center and the Cluj-Napoca Municipality, and financed by the Urban Innovative Actions Program of the European Commission. The project is worth 5.6 million euros and will run between 2019-2021. The project partners are: University of Art and Design from Cluj-Napoca, Transylvania International Film Festival, ZAIN Festival, AltArt Foundation, ARIES Transilvania, Cluj IT, Transylvan Furniture Cluster and Creative Industries Cluster.

WE SUPPORT MEASURES THAT:

- Facilitate the transition to industry 4.0 (automation), providing training and development of new skills for people currently prepared for jobs at risk of extinction as a result of automation;
- Increase competitiveness and involvement in societal needs for the cultural industries of the city (film, design, music, crafts, media etc.);
- Contribute to understanding and proposing fundamental changes to the organization of work at city level by working with social categories currently excluded from the labor market.



NOTE ABOUT THE DATA USED

Transport data:

Automobiles registered in Cluj-Napoca city, Tax Authority Cluj-Napoca, 2015-2017

Taxi trips, having Cluj-Napoca as destination, requested through the CleverTaxi application, January 1, 2018 - March 31, 2018

The Public Transport Company, Ticketing System: Table with GPS positioning, per second, for transport vehicles; Table with travel ticket validation based on electronic cards, per second; Table with travel ticket validation based on paper tickets, per second

Traveling speed on public transport, collected through GPS systems during student practice, 45 students, Babeş-Bolyai University, Faculty of Geography, March-July 2015 and March-July 2016.

Traveling speed on means of transport (public, private cars, bicycle) to Nicolae Bălcescu High School, collected by GPS systems, during student practice, 22 students, Babeş-Bolyai University, Faculty of Sociology and Social Work, June 2018.

Population data:

Residence addresses of pupils from classes 0 and 1, studying at the "Nicolae Bălcescu" High School, survey filled by parents on an anonymous basis, at the request of the Cluj-Napoca City Hall.

National Institute of Statistics, Tempo POP108D, POPULATION BY RESIDENCE on July 1 by age and age groups, gender, counties and localities, 2017..

National Institute of Statistics, Population and Housing Census, 2011, census map distribution.

Number of classes of pupils in educational institutions in Cluj-Napoca, according to official sites, for the 2017-2018 school year ..

Top 1000 companies in Cluj-Napoca, Chamber of Commerce and Industries Cluj, companies with adresses și fiscal value, 2011

AUTHORS



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TITUS MAN is a lecturer at the Faculty of Geography at Babeş-Bolyai University. He specializes in integrated geographic systems (GIS), digital mapping and remote sensing, teaching Geoinformatics, GIS Applications in Territorial Planning, GIS Applications in Urban Planning, Advanced Digital Mapping and WebGIS, GIS Modeling of Socio-Economic Processes and Phenomena. He is interested in the territorial analysis of urban, regional and global processes through their geo-spatial modeling. Additionally, his research projects aim to improve digital mapping and remote sensing methods. He has worked as a consultant in territorial development projects at all geographical scales in Romania. He has extensive experience as a consultant for GIS applications.



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The Urban Innovation Unit is a Cluj Cultural Center program, financed by the Cluj-Napoca City Hall and Local Council, and by Banca Transilvania, Evozon, Accenture in Romania, Arxia, IQuest, SYKES Romania and the German Marshall Fund through the „Transatlantic Leadership Initiative" (TLI) and "BUILD Ideas into Action" programs.

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